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HOUSEHOLD SAVINGS IN LESS DEVELOPED COUNTRIES

by

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled "Household Savings in Less Developed Countries," submitted by Elwin Ramsay Kettner in partial fulfilment of the requirements for the degree of Master of Arts.

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ABSTRACT

Saving is a strategic variable in the process of economic development. In less developed countries household savings make up a large portion of total savings. Thus one of the goals of less developed countries is to encourage household savings. However, before an effective policy can be implemented a government must know some of the factors determining the level of household savings. The purpose of this thesis is to examine and evaluate some of the determinants of household savings. First the simple Keynesian Model is applied to our selection of countries, then other models are introduced. The study reveals that for most countries the simple Keynesian Model explains the level of household savings just as well as the more elaborate models, i.e., models embodying the effect of prices, inflation and the rate of interest.

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CHAPTER I

INTRODUCTION

The purpose of this thesis is to evaluate some of the determinants of household savings in less developed countries. In this chapter we will review the contributions that have been made in this area. An exploration of a number of hypotheses that seem relevant to these countries will be explored in Chapter II. In Chapter III we will discuss the data that are used in the analysis. Chapter IV will present the results. The final chapter will summarize the conclusions.

The best known and simplest hypothesis concerning the determinant of current savings is probably the current income hypothesis or the simple Keynesian Model.[1] It states that current savings is a linear function of current income. In mathematical form it is expressed:

$$S_t = a + b\,Y_t \ ,$$

where S represents total household savings and Y represents total household income. In economic terms "b" is the marginal propensity to save, i.e., the proportion of extra income that is saved.

The hypothesis of the Keynesian saving model is

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[1] J. M. Keynes, <u>The General Theory of Employment, Interest and Money</u>, London, 1936.

that savings are positively related to current income. Johnson and Chiu[2] examine this hypothesis for a total of 44 countries. One reason for their examining this simple hypothesis is to test the validity of the cross-section approach when only one variable is considered in the equation. Their study shows that the sole explanatory variable of income is not a very good determinant of the world savings. They reach the conclusion that saving behavior among societies differs a great deal; that the use of cross-section analysis with current income as the only variable may not be the most appropriate. Landau's article[3] complements that of Johnson and Chiu in that he finds that after a certain level of income other explanatory variables are needed to explain the level of savings. Landau computes the simple current income model twice, first for a group of poorer countries and second for a group of rich countries. He finds that the equation provides a better fit when the poorer countries are considered. The implication is that more than just the level of income must be considered when determining the level of savings in rich countries. He concludes that the relation between saving rates and (the) per capita income is non-linear when a wide range of levels of income is

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[2] D. W. Johnson and J. S. Chiu, "The Saving Income Relation in Underdeveloped and Developed Countries," The Economic Journal, 78:321-33, June, 1968.

[3] Luis Landau, "Saving Functions for Latin America," in Studies in Development Planning, Hollis B. Cheney (ed.), Cambridge: Harvard University Press, 1971.

considered. In another article he maintains that "the saving ratio tends to increase with income per capita, but this rate of increase diminishes and approaches zero as income per capita exceeds a given level."[4] Since under-developed countries are the poorer countries it appears that income per capita will be a vital explanatory variable of the level of savings in these countries.

Lewis'[5] model is interesting in the light of Landau's work. In his model the factor affecting savings is the level of economic development. His model applies to countries that have surplus labor. He maintains that backward countries save less because they have a small capitalist sector. He asserts that if they had a large capitalist sector profits would be a larger part of national income and savings would be greater. When the surplus labor disappears the model no longer holds, and savings become dependent on the rate of interest and other factors. Landau finds that the level of per capita income, which is a good indicator of the level of development, is significant in explaining savings at low levels of development, but as levels of income increase other explanatory

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[4]Luis Landau, "Determinants of Savings in Latin America," Economic Development Report, No. 13, Center for International Affairs, Harvard University, Cambridge, Massachusetts, June, 1966, p. 2.

[5]W. Arthur Lewis, "Economic Development with Unlimited Supplies of Labor," The Manchester School of Economics and Social Studies, 22:139-191, May, 1954.

factors are needed to explain the level of savings.

Johnson and Chiu[6] questioned the validity of cross-section analysis because of the differences among countries. Houthakker[7] introduces the method of covariance to make allowance for these variations. Williamson[8] extends this idea of pooling groups of less developed nations. His article is one of the most comprehensive studies to date that investigates the determinants of savings.

Williamson examines the role of functional distribution of income. The hypothesis that the marginal propensity to save from labor income differs from marginal propensity to save from non-labor income dates all the way back to Marx, if not earlier.[9] Kaldor also makes use of this distinction in his growth models.[10] One reason for the differing propensities may be caused by the different rates of return available to the two groups. Entrepreneurs can invest directly and are able to follow market conditions much more

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[6]Johnson and Chiu, loc. cit.

[7]H. S. Houthakker, "An International Comparison of Personal Savings," Bulletin of the International Statistical Institute, 38, Part 2, 1960.

[8]Jeffrey G. Williamson, "Personal Savings in Developing Nations: An International Cross-Section from Asia," Economic Record, 44:194-210, June, 1968.

[9]H. S. Houthakker, loc. cit., p. 56.

[10]N. Kaldor, "A Model of Economic Growth," Economic Journal, 67:591-624, December, 1957.

closely, while laborers can only invest indirectly. Entrepreneurs will probably be much more aware of profitable investment opportunities. The rate of return, on these direct investments is much higher than can be obtained through intermediaries. Klein[11] proposes another reason why entrepreneurial saving propensity differs. He suggests that the entrepreneur may have a preference to use his own funds for investment rather than other investors' funds in the desire to maintain control over the firm. In any event, the entrepreneur will need to have higher gross savings in order that he maintain his depreciating stock of physical assets. Williamson finds the difference between the marginal propensity to save from non-labor and the marginal propensity to save from labor income quite substantial, with the former being the greater.[12]

Williamson also examines the impact of permanent income and transitory income on household savings. He tests the hypothesis on which the Friend and Taubman Model is built,[13] i.e., that the propensity to save out of transitory income will differ from that out of

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[11] L. Klein, "Entrepreneurial Savings," in I. Friend and R. Jones (eds.) Proceedings of the Conference on Consumption and Savings, Vol. II, Philadelphia, 1960, pp. 297-335.

[12] Jeffrey G. Williamson, loc. cit.

[13] Irwin Friend and Paul Taubman, "The Aggregate Propensity to Save: Some Concepts and Their Application to International Data," Review of Economics and Statistics, 48:111-23, May, 1966.

permanent income. Friedman[14] proposes that consumers become accustomed to some level of permanent income and base their consumption upon this level. This implies that if households receive some unexpected income, they will treat this transitory income differently from their permanent income. Williamson explores the relationship:

$$S_t = a + b_1 Y_P + b_2 Y_T$$

where Y_T and Y_P stand for transitory income and permanent income respectively. Notice that if income is rising rapidly, the increase will show up as transitory income. If the propensity to save is greater from transitory income as opposed to permanent income, rapid income growth will stimulate savings. For Japan and the Philippines, Williamson finds that the marginal propensity to save out of transitory income is about one and a half to two times that of the propensity to save out of permanent income.[15]

It is often believed that the interest rate has an influence on savings. A rise in interest rates might increase the propensity to save of households by encouraging them to refrain from consumption and thereby acquire assets permitting a higher consumption in the future. Williamson considers interest rates as an explanatory variable in his model and his results show that interest

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[14] Milton Friedman, "The Permanent Income Hypothesis," A Theory of the Consumption Function, Princeton, 1957, pp. 20-37.

[15] Jeffrey G. Williamson, loc. cit.

rates exert either a negative or an insignificant influence upon personal savings. These results strongly contradict the hypothesis that interest rates act as an incentive to save. Gupta[16] questions the validity of these results and applies the same model to Indian data. His data from India are from a better source[17] and he uses various definitions for the interest rate instead of just one rate of return. He concludes that interest rates have a positive and significant influence on savings in India.

Gupta further investigates household savings in India by differentiating between urban and rural households.[18] His results show that the marginal propensity to save is greater in the urban sector of the economy. However, the marginal propensity to save out of transitory income is very significant in the rural sector, but close to zero in the urban sector. Thus he questions the wisdom of measures like temporary tax relief to urban households in the hope that this will stimulate additional savings.

Diwan[19] considers the effect of prices on savings.

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[16]K. L. Gupta, "Personal Savings in Developing Nations: Further Evidence," Economic Record, 46:243-49, June, 1970.

[17]Gupta used the twice revised data published by the Reserve Bank of India.

[18]K. L. Gupta, "On Some Determinants of Rural and Urban Household Savings Behaviour," The Economic Record, 46:578-583, December, 1970.

[19]R. K. Diwan, "The Effect of Prices on Savings," Economic Development and Cultural Change, 16:430-35, April, 1968.

When savings are treated as a residual, a higher price level would imply, ceteris paribus, that there would be less left over for savings. However, expectations also play an important role. If people expect the present rate of inflation to be indicative of the future, people will buy now and thus savings will be decreased. If people expect the trend to be reversed they will postpone consumption and savings will increase. Thus, a priori, we cannot say whether we expect a positive or a negative relationship. Diwan uses a simple theoretical model that includes income and prices as the explanatory variables. Prices are broken into two categories: "changes in the price level" and the "absolute level of prices." The model is written as:

$$S_t = a + b_1 Y_{dt} + b_2 P_t + b_3 \frac{\dot{P}_t}{P_t}$$

where Y_d stands for disposable income, P_t represents the price level, and $\dot{P}$ represents the change in the price level.

There have been a fair amount of theoretical contributions to the determinants of savings, and the hypotheses have been quite well tested in developed countries. Landau has conducted quite a comprehensive investigation into Latin American countries. However Asian and African countries lack such a comprehensive investigation. The only exception is the study by Williamson mentioned above which covered the following eight Asian countries: Korea, Japan, Malaysia, Taiwan, Vietnam, Burma, Philippines and India. The present study, though patterned on Williamson's work, differs

from his work in a number of ways: first, the data for the present study is for a longer time period. On the average Williamson had data for a period of 11 years, whereas I have data for an average of 16 years.[20] Secondly, more explanatory variables are included in this study. Finally our selection of countries differs from those selected by Williamson. One influencing factor in the selection of countries is the availability of data. Countries were considered less developed if the average per capita income during the period under study was below 800 U.S. dollars.[21] Our study includes the following seven Asian countries: Burma, Ceylon, Israel,[22] Japan, Philippines, South Korea and Taiwan. Adequate data were available for only two African countries--The Republic of South Africa and Mauritius. Four European countries are included in the analysis, these are Greece, Malta, Spain and Yugoslavia. It will be interesting to notice if the saving habits are affected by geographical location. It must be kept in mind that Yugoslavia is a non-market economy, thus perhaps the determinants of the level of savings may differ from those of other countries.

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[20]The time period considered in this study is generally the 1950's and early '60's.

[21]This cut off line was used by Joergen R. Lotz and Elliott R. Morss "A Theory of Tax Level Determinants for Developing Countries," Economic Development and Cultural Change, Vol. 18, April, 1970, p. 328.

[22]Israel is considered an Asian country in the U.N. classifications.

CHAPTER II

HYPOTHESES

In this Chapter we shall discuss the hypotheses tested in our study. A brief discussion of these now follows.

Simple Keynesian Model

The first model to be examined is the simple current income hypothesis. This is a good starting point as it provides a comparison for other models. Thus it can be determined if there is a better fit with the inclusion of other explanatory variables. The model is:

$$S_t = a + bYt$$

where S represents per capita household savings and Y represents per capita household income. Two definitions of income will be considered, real income before tax, and real disposable income.

Permanent and Transitory Income

The Friend and Taubman model will be tested.[1] It is expressed in the form:

$$S_t = a + b_1 Y_P + b_2 Y_T$$

where Y_P and Y_T are permanent and transitory income respectively. The hypothesis is that the marginal propensity

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[1]Friend and Taubman, loc. cit.

to save from transitory income is higher than the marginal propensity to save from permanent income.

The Role of Distribution of Income

The reasons why one might expect the marginal propensity to save from property income to be higher than the marginal propensity to save from labor income have already been discussed. The hypothesis will be examined by the use of the following relationship:

$$S_t = a + b_1 L_t + b_2 E_t$$

where S stands for per capita savings, L stands for per capita labor income, and E stands for per capita property income.

Savings-Income Ratio

The hypothesis that the saving ratio is influenced by the level of per capita income will be examined. The model is:

$$S_t/Y_t = a + b Y_t ,$$

where Y represents per capita income. The belief is that the S/Y ratio will be higher, the higher the level of per capita income. However Modigliani[2] maintains that the ratio is affected by the rate of growth of income. This relationship would be expressed as:

$$S_t/Y_t = a + b g$$

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[2] Franco Modigliani, "The Life Cycle Hypothesis of Saving, The Demand for Wealth and the Supply of Capital," Part III, prepared for the First International Meeting of the Econometric Society, Rome, Italy: (1966).

where g stands for the rate of growth of household income.

It has been hypothesized that there would be a difference in the savings propensity between property income and labor income, i.e., the model was $S_t = a + b_1L_t + b_2E_t$. Since total income minus non-labor income equals labor income we have the following relationship:

1. $S = a + b_1 (Y-E) + b_2E$

or

2. $S/Y = \frac{a}{Y} + b_1 + (b_2 - b_1) \frac{E}{Y}$

Now

3. $S/Y = a_o + b \frac{E}{Y}$[3]

is a simplified version of (2) and as shown can be derived from equation (1). We will examine the relationship given by equation (3). If the marginal propensity to save from property income is higher than the marginal propensity to save from labor income it would be expected that the higher the property income ratio, the larger will be the savings income ratio.

Since it has already been suggested that the level of income and income growth affect the savings ratio, the following relationship will be considered:

$$S/Y = a + b_1 Y_t + b_2 g_t + b_3 \frac{E}{Y}$$

where Y, g, and $\frac{E}{Y}$ represent per capita income, rate of growth of household income, and the property income ratio, respectively.

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[3]The term "a_o" is used in equation (3) to show that the intercept in this equation is not the same as the intercept in equation (1).

Permanent and Transitory Concepts Applied to Functional Distribution of Income

It has been hypothesized that there is a difference in the savings propensities from permanent income and from transitory income. This concept will be applied to labor and property income to determine whether property owners treat their transitory income differently from wage earners by using the model:

$$S_t = a + b_1 \text{ PLI} + b_2 \text{ TLI} + b_3 \text{ PPI} + b_4 \text{ TPI}$$

where PLI, TLI, PPI and TPI represent permanent labor income, transitory labor income, permanent property income, and transitory property income, respectively.

Effect of Interest Rate

If one subscribes to the idea that higher interest rates makes present consumption more costly, a higher interest rate should increase savings. i.e., a positive relationship between interest rates and the level of savings. However an increase in interest rates might conceivably lower savings, since with higher rates less is needed to be saved in order to reach a certain specified amount. Finally if the savings of a household are motivated by investment plans, higher interest rates might discourage investment and thus savings.[4] The effect of interest rates will be examined by the use of

[4] Irwin Friend, "Determinants of the Volume and Composition of Savings with Special Reference to the Influence of Monetary Policy," in Impacts of Monetary Policy, Commission on Money and Credit (ed.), Prentice-Hall, 1963.

the following equation:

$$S_t = a + b_1 Y_t + b_2 r,$$

where r refers to the real interest rate which is the nominal interest rate corrected for the rate of change in prices.

Effect of Prices

It is often argued that higher prices tend to reduce the value of accumulated financial assets and thus stimulate savings.[5] However, in less developed countries financial assets are not of such a magnitude as to exert much of an effect on savings. Ignoring the effect of financial assets, it might be argued that higher prices will increase consumption expenditures and thus reduce savings. The influence that the rate of inflation exerts on savings will depend upon expectations. If people expect inflation to continue they will consume now and their savings will be decreased. If people expect that the high rate of inflation is just temporary, they will postpone consumption and savings will be increased, thus implying a positive relation between inflation and savings. The effect of prices will be examined by the use of the following equation:

$$S_t = a + b_1 Y_t + b_2 P_t + b_3 \dot{P}_t / P_t ,$$

where S, Y, P, and $\dot{P}$ represent per capita savings, per capita income, the price level and the change in the price level, respectively.

[5] R. K. Diwan, loc. cit., p. 430.

CHAPTER III

THE DATA

The present study deals with personal savings. Personal savings is defined as the difference between income and expenditure in the "household and private non-profit institution" sector of the economy. Most of the data on savings and income are from the _Yearbook of National Accounts Statistics_[1] of the United Nations Statistical Office. These data are published in local monetary units at current market prices. Since this study deals exclusively with time series analysis, data are left in local currency units. Data on household income and household savings were converted to per capita real terms by using the cost of living index with 1963 as the base year for most countries and total population. The cost of living indices were obtained from the _International Financial Statistics_[2] and various issues of the _Statistical Yearbook_.[3]

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[1]United Nations, Department of Economic and Social Affairs, Statistical Office, _Yearbook of National Account Statistics_, (New York: United Nations).

[2]International Monetary Fund, Statistics Bureau, _International Financial Statistics_, "Supplement to 1971 Issues," (Washington, D.C.):

[3]United Nations, Department of Economic and Social Affairs, Statistical Office, _Statistical Yearbook_ (New York: United Nations).

Population figures were taken from the National Accounts of Less Developed Countries.[4]

Two explanatory variables are considered for the simple Keynesian Model. First gross income is considered as an explanatory variable, and secondly net disposable income is considered as the explanatory variable. Net disposable income is defined as gross income minus taxes. In most cases direct taxes are used, but in some countries (Japan, Philippines, Israel) taxes are defined as direct taxes plus other transfers to the general government.

Household income is divided into two main categories. The division is based upon its source. Income from labor includes all wages and salaries and supplements payable to normal residents. The second category is income from property and entrepreneurship. This includes income in money and kind accruing to individuals in the capacity of sole proprietors or independent professional men, and income from ownership of lands and buildings. Labor income and property income is before taxes, since there is no reasonable way to divide the tax burden between the two groups. A break down of income as to the source could not be obtained for three countries (Burma, Republic of South Africa, and the Philippines) and there is no readily available method to make a useful approximation of labor and property income.

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[4]Organization for Economic C0-operation and Development, Development Centre, National Accounts of Less Developed Countries, (Paris: 1970).

Some countries had no direct information on "Households and non-profit institutions," for example Israel and Ceylon. Income of households was estimated from the breakdown of distribution of national income. To arrive at savings, the consumption expenditures of households plus taxes were subtracted from household income. For Israel taxes were defined as direct taxes and other transfers to the general government. In Ceylon's case taxes were defined as taxes on income and other indirect taxes.

Household income was also broken down into another classification, i.e., permanent and transitory income. The problem is not only of the two components of income, but there is also the problem of determining the permanent income in a time series analysis. In this study permanent income is defined as a moving average of the previous two years. For example, permanent income in period t is defined as $\frac{Y_{t-1} + Y_{t-2}}{2}$.[5] This is probably the simplest definition of permanent income, but since our data is limited it might not be advisable to work with more sophisticated definitions. Transitory income is given by the deviation of permanent income from current income.

Interest rates were obtained from various issues of the <u>International Financial Statistics</u> and the <u>Statistical</u>

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[5]This measure of permanent income was used by Roy Choudhury, "Income, Consumption and Saving in Urban and Rural India," <u>Review of Income and Wealth</u>, Series 14, March, 1968, p. 39.

Yearbook. For interest rates various measures were used, for example, the discount rate, government bond yield, or the call money rate. For some countries more than one measure was available. The measure that gave the best fit is reported. In Israel's case the interest rates were obtained from Ben Shahan's work.[6] The measure of the interest rate in Israel is the rate charged by the three largest banks. To obtain the real interest rate, the rate of inflation was subtracted from the nominal interest rate.

Although care has been taken in the selection of the data we must still be aware of limitations. Some countries had to be omitted from the study since the variables involved different concepts. The data for Yugoslavia may be biased in order to present a favourable picture to the free world. The data for Israel may not be strictly comparable over time since the country was involved in a war for a short period. These limitations should be kept in mind when interpreting our results.

Table A shows the number of years for which the data were available for the different countries covered in our study.

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[6] Ben Shahan, Interest Rates and the Cost of Capital in Israel, Paul Siebech, 1965.

Table A

Country	Time Period	No. of Observations
Asian Countries		
Burma	1950-1962	13
Ceylon	1950-1968	19
Israel	1952-1963	12
Japan	1950-1968	19
Philippines	1950-1968	19
S. Korea	1955-1968	14
Taiwan	1951-1968	18
African Countries		
Mauritius	1950-1968	19
Rep. of S. Africa	1955-1968	14
European Countries		
Greece	1955-1968	14
Malta	1955-1968	14
Spain	1955-1968	14
Yugoslavia	1952-1968	17

CHAPTER IV

THE RESULTS

The results of this analysis are presented in this chapter. All equations are estimated by the ordinary least square method.[1] All variables without exception are reported in per capita real terms. In each table, the countries are arranged in descending order according to their R^2 value. R^2 is a measure to describe how well the explanatory variables explain the level of savings. A discussion of the results will accompany each table.

The Keynesian Model

The estimates arrayed in Table 1A and 1B refer to the simple current income hypothesis. The explanatory variable in Table 1A is before tax income, where as in Table 1B the explanatory variable is after tax income, or disposable income. The countries are arranged according to the explanatory power of the equation, measured by R^2. The results of these tables serve as a useful starting point for a discussion of the determinants of personal savings.

In Table 1A the current income hypothesis provides the best explanation for Greece. The coefficient on income

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[1]Jan Kementa, Elements of Econometrics, The MacMillan Company, New York: 1971.

Table 1A

SIMPLE KEYNESIAN MODEL

Country	Intercept	Regression Coefficients of: Y	R^2
Greece	-0.0010 (0.0001)	0.1745 (0.0080)	.979
Japan	-0.0049 (0.0012)	0.1872 (0.0071)	.978
Taiwan	-1.2656 (0.0947)	0.3261 (0.0163)	.966
Yugoslavia	-0.0001 (0.0000)	0.2071 (0.0191)	.899
Israel	-0.2032 (0.0411)	0.1150 (0.0209)	.790
Philippines	-0.2333 (0.0367)	0.5804 (0.0828)	.766
Malta	-0.0031* (0.0047)	0.2070 (0.0368)	.759
Spain	-0.0022 (0.0008)	0.1683 (0.0349)	.698
Mauritius	-0.5921 (0.1910)	0.6791 (0.1992)	.436
Rep. S. Africa	-0.0133* (0.0177)	0.1385 (0.0603)	.345
Ceylon	-0.1036* (0.0611)	0.2182 (0.1066)	.218
Burma	0.0092* (0.0206)	0.0670* (0.0952)	.052
S. Korea	-0.0000* (0.0004)	0.0198* (0.0285)	.046

Equation: $S = a + bY$

Where: S = savings per capita
Y = income per capita

*Indicates lack of significance at 90% level.
() Indicates the Standard Error.

Table 1B

SIMPLE KEYNESIAN MODEL

Country	Intercept	Regression Coefficients of: Yd	R^2
Japan	-0.0057 (0.0011)	0.2140 (0.0077)	.980
Greece	-0.0010 (0.0001)	0.1958 (0.0089)	.979
Taiwan	-1.2709 (0.0096)	0.3316 (0.0168)	.965
Yugoslavia	-0.0001 (0.0000)	0.2334 (0.0213)	.901
Israel	-0.2105 (0.0406)	0.1336 (0.0232)	.804
Malta	-0.0032* (0.0047)	0.2127 (0.0375)	.762
Spain	-0.0028 (0.0009)	0.2048 (0.0416)	.708
Mauritius	-0.6117 (0.1839)	0.7246 (0.1988)	.465
Rep. S. Africa	-0.0183* (0.0188)	0.1643 (0.0676)	.371
Ceylon	-0.1339 (0.0614)	0.2979 (0.1178)	.298
Burma	-0.0075* (0.0208)	0.0767* (0.0991)	.062
S. Korea	-0.0001* (0.0004)	0.0209* (0.0296)	.047

Equation: $S = a + b\ Yd$

Where: S = savings per capita
Yd = disposable income per capita

* Indicates the lack of significance at 90% level.
() Indicates the Standard Error.

per capita is .174.[2] This means that for a unit increase in income, households save .174 of this increase. In economic terms this is referred to as the marginal propensity to save. The intercept is negative, implying that at a zero level of income there will be dis-savings. The high value of R^2 (.979) indicates that per capita income is very important in explaining the level of households savings.

All except two countries (Burma and South Korea) have slope coefficients that are significant at the ninety per cent level.[3] In Burma and South Korea the standard error is larger than the coefficient, thus implying that current income does not have a very significant effect on savings. The low R^2 values of these countries (.052 and .046) indicates that the equation does not provide much explanation as to the level of savings. The range of the marginal propensities to save from real income is quite substantial. The lowest marginal propensity to save is .019 for South Korea and the highest marginal propensity to save is .679 for Mauritius. Perhaps Mauritius' prosperity in the world sugar market helps to explain the high marginal propensity to save. In Greece, Japan, Taiwan, Yugoslavia, Israel, Philippines, Spain and Mauritius the intercepts are negative.

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[2] In our discussion the coefficients will be presented to three significant decimal places without rounding off.

[3] The level of significance that is chosen is arbitrary, however this study uses the same level of significance as that used in Williamson's article.

and significant at the ninety per cent level. This implies that at low levels of income households will be dis-saving. In the other countries (Malta, Republic of South Africa, Ceylon, Burma and South Korea) the intercepts are not significantly different from zero. When the intercept is negative, a linear saving function implies that the marginal propensity to save exceeds the average propensity to save. When the marginal exceeds the average propensity to save the saving-income ratio will increase as income grows. In Burma's case the sign of the intercept is positive (.009). A positive sign implies the average propensity to save exceeds the marginal propensity to save. The positive sign on the intercept and the insignificant coefficient on per capita income makes us wonder if current income has any effect on the level of savings in Burma.

All coefficients on per capita income are positive, thus higher income leads to higher household savings. The order of the countries is interesting in that we notice that income as an explanatory variable provides a better fit for the richer countries. For the poorer countries, e.g., Burma and South Korea, the equation has little explanatory power. It is interesting that the value of R^2 is relatively high for Yugoslavia (.899). Thus even though Yugoslavia is a non-market economy, current income determines the level of savings in much the same fashion as in the other countries. We also notice that the explanatory power of the simple

Keynesian Model does not seem to be affected by geographical factors.

In Table 1B the explanatory variable of the level of savings is disposable income. Results for the Philippines are not presented since no measure of household taxes were available. As would be expected the marginal propensity to save from disposable income is higher than the marginal propensity to save from gross income. For example in Japan the marginal propensity to save from gross income is .187 where as the marginal propensity to save from disposable income is .214. The fit of the equation is not significantly improved when we consider disposable income rather than gross income. Thus the explanatory power of the simple Keynesian Model is equally effective whether we use gross income or disposable income.

Permanent and Transitory Income

The results of the Friend and Taubman Model are presented in Table 2. In all except two countries (Philippines and South Korea) the marginal propensity to save out of transitory income is greater than the marginal propensity to save from permanent income. For example in Japan the marginal propensity to save from permanent income is .167 and the marginal propensity to save from transitory income is .321. Thus in Japan the marginal propensity to save out of transitory income is almost twice the marginal propensity to save out of permanent income. Williamson found that the

Table 2

PERMANENT AND TRANSITORY INCOME

Country	Intercept	Regression Coefficients of: Y_P	Y_T	R^2
Japan	-0.0047 (0.0011)	0.1678 (0.0107)	0.3215 (0.0601)	.984
Greece	-0.0009 (0.0001)	0.1715 (0.0108)	0.2008 (0.0603)	.979
Taiwan	-1.1617 (0.0976)	0.2961 (0.0202)	0.4643 (0.0664)	.975
Yugoslavia	-0.0001 (0.0000)	0.2024 (0.0197)	0.2961 (0.0905)	.907
Israel	-0.1835 (0.0324)	0.0644 (0.0253)	0.4702 (0.1387)	.892
Spain	-0.0015 (0.0007)	0.1177 (0.0351)	0.4160 (0.1048)	.819
Philippines	-0.2276 (0.0372)	0.5765 (0.0831)	0.3015* (0.3032)	.780
Malta	0.0019* (0.0090)	0.1611 (0.0781)	0.2747 (0.1075)	.770
Rep. S. Africa	0.0176* (0.0212)	0.0173* (0.0775)	0.5170 (0.1868)	.562
Mauritius	-0.1391* (0.3184)	0.2071* (0.3315)	0.7097 (0.1880)	.535
Ceylon	0.0337* (0.0662)	-0.0327* (0.1179)	0.4828 (0.1211)	.533
Burma	0.0066* (0.0164)	0.0595* (0.0762)	0.3362 (0.1330)	.461
S. Korea	-0.0001* (0.0004)	0.0241* (0.0375)	-0.0059* (0.1412)	.050

Equation: $S = a + b_1 Y_p + b_2 Y_T$

Where: Y_P = permanent income
Y_T = transitory income

*Indicates lack of significance at the 90% level.
() Indicates the Standard Error.

difference was one and a half times, however his analysis was for thirteen years where as this study includes seventeen years. This suggests that over the last few years the importance of transitory income has continued to grow. For countries like Ceylon, Burma and the Republic of South Africa the difference between the marginal propensity to save from transitory income and the marginal propensity to save from permanent income is very large. The marginal propensity to save from permanent income in these countries is not significantly different from zero, whereas the marginal propensity to save from transitory income ranges from .336 for Burma to .517 for the Republic of South Africa. A temporary tax relief in these countries would be most beneficial to increase savings. However if the government is interested in giving tax exemptions to increase spending, the exemption will have to be in effect for several years until people's expectations have changed. Once people become accustomed to this new level as permanent income, spending will be greatly increased since the marginal propensity to save form permanent income is not significantly different from zero in these countries.

The Philippines and South Korea are the only countries for which the marginal propensity to save from transitory income is not greater than the marginal propensity to save from permanent income. In South Korea the marginal propensity to save from both permanent and

transitory income is insignificant. In South Korea people seem to spend all their income, whether it is permanent income or whether the income is transitory. In the case of the Philippines the result is opposite of that predicted by our hypothesis. The estamates show that the marginal propensity to save from transitory income is not significantly different from zero, whereas the marginal propensity to save from permanent income is .576. This implies that in the Philippines households have a tendency to spend most of their transitory income. This result is contrary to that found by Williamson. His data covered the period 1950-1964 and he found that the marginal propensity to save from transitory income (.504) was greater than the marginal propensity to save from permanent income (.298).[4] Our study covers four more more years, thus perhaps the saving habits of the households have been changing in recent years.

The results of the model show that in most countries households have a higher marginal propensity to save from transitory income that from permanent income. However by no means is all of the transitory income saved. For some countries the introduction of permanent and transitory concepts increases the explanatory power of the saving function to a considerable extent. For example in the simple Keynesian Model (Table 1A) only five per cent and twenty-one per cent of the saving levels were explained for Burma and Ceylon respectively. With the introduction of the permanent and

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[4]Williamson, loc. cit., p. 205.

transitory concepts forty six per cent and fifty three per cent of the saving levels are now explained in these countries.

The Role of Distribution of Income

The results of Table 3 show the important influence that the distribution of income plays in determining the level of household savings. No results are given for Burma, Philippines and the Republic of South Africa since the data for these countries did not have a breakdown of income as to its source. For Ceylon, consideration of the source of income increases the explanatory power of the saving function. In the Simple Keynesian Model (Table 1A) R^2 was .218 where as in this model the R^2 is .478. However the best explanation of Ceylon's level of savings so far, is given by the Permanent and Transitory Income Model where R^2 is .533 (Table 2).

In Japan, Taiwan, Yugoslavia, Israel, Mauritius and South Korea the marginal propensity to save from property income is greater than the marginal propensity to save from labor income. For example the marginal propensity to save from labor income in Japan is not significantly different from zero, where as the marginal propensity to save from property income is .588. These results have important policy implications. If the government is intent on giving tax cut to increase savings, it appears that these exemptions would be most influential if they are given to property income receivers.

Table 3

FUNCTIONAL DISTRIBUTION OF INCOME

Country	Intercept	Regression Coefficients of: L	E	R^2
Japan	-0.1242 (0.0048)	0.0085* (0.1256)	0.5880 (0.2555)	.982
Greece	-0.0011 (0.0001)	0.2418 (0.0766)	0.1920 (0.0521)	.978
Taiwan	-1.4486 (0.1544)	0.2730 (0.0574)	0.4541 (0.0975)	.966
Yugoslavia	-0.0002 (0.0001)	0.1830 (0.0807)	0.6179 (0.3847)	.902
Israel	-0.1723 (0.0527)	-0.1816* (0.2406)	0.5455* (0.3238)	.837
Malta	-0.0113* (0.0083)	0.3636 (0.1842)	0.2158* (0.3138)	.737
Spain	-0.0018* (0.0024)	0.2899* (0.2651)	-0.0351* (0.6195)	.700
Mauritius	-0.3887 (0.1971)	0.3054* (0.3005)	0.8039 (0.1858)	.574
Ceylon	-0.3462 (0.1053)	1.6026 (0.5314)	-0.3340* (0.2275)	.478
S. Korea	-0.0001* (0.0004)	-0.1028* (0.1196)	0.0917* (0.0721)	.155

Equation: $S = a + b_1 L + b_2 E$

Where: S = Savings Per Capita
L = Labor Income Per Capita
E = Property Income Per Capita

*Indicates a lack of significance at the 90% level.
() Indicates the Standard Error.

In South Korea's case the coefficient on labor income is negative (-0.102), but it is not significant since the standard error (.119) is larger than the coefficient. The coefficient on property income is .091 and the standard error (.072) is less than the coefficient. This implies that in South Korea laborers spend almost all their income and it is only the receivers of property income that contribute to savings in the household sector.

For Ceylon the coefficient on property income is -.334 however it is not significant at the ninety per cent level. The coefficient on labor income is 1.602 and it is significant at the ninety per cent level. We must interpret this result carefully since it does not lend itself to a rigorous economic interpretation. It implies that for an extra unit increase in income the household saves 1.602 units. However the function seems to imply that it is the laborers that contribute the most to household savings in Ceylon.

In Spain the coefficients on both labor income (.289) and property income (-.035) are insignificant at the ninety per cent level. The coefficient for labor income (.289) is larger than the coefficient for property income (-.035), and the standard error (.265) is smaller than the coefficient (.289), whereas for property income the standard error (.619) is larger than the coefficient (-.035). This implies that in Spain the marginal propensity to save from labor income is higher than the marginal propensity to save from property

income.

Savings-Income Ratio

The estimates presented in Table 4B provide a test of Modigliani's hypothesis which suggests that there is a strong positive association between the savings-income ratio and the rate of growth of income. The common belief has been that the level of income is most influential in determining the savings-income ratio[5] (Table 4A). Also as previously mentioned the effect of the property-income ratio on the level of household savings will be examined (Table 4C).

A negative intercept in the Keynesian Model implies the marginal propensity to save is greater than the average propensity to save, and thus the savings-income ratio will increase as per capita income increases. This fact is borne out in Table 4A where a higher level of income is associated with a higher savings-income ratio except for Burma and South Korea. In these two countries the level of income has as insignificant effect upon the savings-income ratio. Notice that in the simple Keynesian Model the marginal propensities to save from per capita income were not significantly different from zero for these same countries (Table 1A).

In Yugoslavia an increase in per capita income increases the savings-income ratio greatly. The intercept is negative implying that at low levels of income households

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[5] Luis Landau, loc. cit.

Table 4A

INCOME-SAVING RATIO[6]

Country	Intercept	Regression Coefficients of: Y	R^2
Yugoslavia	-0.0593 (0.0137)	102.4037 (10.5541)	.878
Taiwan	-0.1090 (0.0215	0.0356 (0.0037)	.869
Greece	0.0339 (0.0090)	4.6476 (0.5869)	.862
Philippines	-0.5041 (0.0765)	1.2449 (0.1725)	.776
Israel	-0.1018 (0.0249)	0.0556 (0.0126)	.707
Japan	0.1142 (0.0113)	0.2233 (0.0656)	.435
Spain	-0.0368* (0.0417)	4.4252 (1.6691)	.412
Mauritius	-0.5320 (0.1985)	0.6170 (0.2070)	.371
Ceylon	-0.1559* (0.1107)	0.3349 (0.1932)	.166
Rep. S. Africa	0.0457* (0.0609)	0.1597* (0.2064)	.056
Malta	0.1542 (0.0372)	0.2150* (0.2894)	.052
Burma	0.1613 (0.0935)	-0.2348* (0.4308)	.032
S. Korea	0.0140* (0.0325)	-0.0436* (2.1194)	.0000

Equation: $S = a + b\,Y$

Where: S = savings per capita
Y = income per capita

*Indicates the lack of significance at 90% level.
() Indicates the Standard Error.

[6]Income as explanitory variable.

will be dis-saving.

It was found that the marginal propensity to save from transitory income was greater than the marginal propensity to save from permanent income in all countries except the Philippines (Table 2), (no significant results were obtained for South Korea). It is logical to believe that the greater the difference between the two propensities, the greater will be the effect of the rate of growth of per capita income on the savings-income ratio, since the growth will show up as transitory income and thus result in greater savings. The Philippines (Table 2) has a higher marginal propensity to save from permanent income (.576) as compared to transitory income (.301), thus growth in real income would not have as much effect on the savings-income ratio as in the other countries. As we see in Table 4B the explanatory power of growth of real income on the saving ratio in the Philippines is a mere one per cent and in South Korea growth of income does not have any effect on the saving-income ratio. In six countries (Spain, Ceylon, Taiwan, Japan, Mauritius, and South Africa) the coefficients on the growth rate are significant at the ninety per cent level. When the level of per capita income was considered as an explanatory variable of the savings ratio, the coefficients were significant for nine countries (Yugoslavia, Taiwan, Greece, Philippines, Israel, Japan, Spain, Mauritius and Ceylon).

Table 4B

INCOME-SAVING RATIO[7]

Country	Intercept	Regression Coefficients of: g	R^2
Spain	0.0444 (0.0099)	0.4834 (0.1270)	.591
Mauritius	0.4412 (0.0086)	0.5368 (0.1299)	.532
Ceylon	0.0179 (0.0094)	0.4347 (0.1378)	.398
Rep. S. Africa	0.0740 (0.0104)	0.4125 (0.2036)	.291
Taiwan	0.0532 (0.0221)	0.4937 (0.2347)	.240
Japan	0.1305 (0.0114)	0.1994 (0.1048)	.194
Malta	0.1766 (0.0056)	0.1394* (0.1003)	.162
Greece	0.0926 (0.0134)	0.1529* (0.1691)	.075
Burma	0.1116 (0.0124)	0.0244* (0.0386)	.042
Yugoslavia	0.0622 (0.0176)	0.0646* (0.1497)	.014
Israel	-0.0074* (0.0450)	0.1113* (0.3776)	.010
Philippines	0.0564 (0.0346)	-0.2019* (0.5120)	.010
S. Korea	0.0128* (0.0145)	0.0059* (0.1328)	.000

Equation: $S/_Y = a + b\ g$

Where: S = savings per capita
Y = income per capita
g = rate of growth in income.

*Indicates the lack of significance at 90% level.
() Indicates the Standard Error.

[7]Rate of growth of income as explanitory variable.

It was reported above that the marginal propensity to save from property income is greater than the marginal propensity to save from labor income in Japan, Taiwan, Yugoslavia, Israel, Mauritius and South Korea (Table 3). From these results it would be reasonable to suppose that the property-income ratio would have an influence on the savings-income ratio. In Table 4C we see that in five countries (Yugoslavia, Spain, Mauritius, Japan, Taiwan) the coefficients on the property income ratio are significant at the ninety per cent level (data on property income was not available for Burma, Philippines and the Republic of South Africa). Thus in some countries the ratio of property income to total income seems to have an influence on the savings-income ratio.

All the significant intercepts in Table 4C are positive except in the case of Mauritius. This means that even if there was no property income, there still would be a positive savings-income ratio since there would be savings from labor income. The intercept for Mauritius is negative, implying that if there was no property income, there would be no savings. Recall that in the Functional Distribution of Income Model (Table 3) the coefficient on labor income was not significantly different than zero, whereas the marginal propensity to save from property income was .803.

In Table 4C the positive coefficient on the property-income ratio in the case of Yugoslavia (.543) means

Table 4C

SAVING-INCOME RATIO[8]

Country	Intercept	Regression Coefficients of: E/Y	R^2
Yugoslavia	0.2453 (0.0337)	0.5436 (0.1021)	.687
Spain	0.4204 (0.0923)	-0.8808 (0.2326)	.589
Mauritius	-0.2066 (0.0860)	0.7778 (0.2505)	.391
Japan	0.2866 (0.0472)	-0.3380 (0.1164)	.360
Taiwan	0.4144 (0.1209)	-0.6380 (0.2402)	.336
Greece	0.2951 (0.1322)	-0.3430* (0.2367)	.173
Korea	-0.1696* (0.1270)	0.2934* (0.2033)	.172
Israel	-0.4157* (0.4587)	1.1295* (1.2229)	.095
Malta	0.2112 (0.0700)	-0.0737* (0.1746)	.017
Ceylon	-0.0771* (0.2400)	0.2278* (0.4854)	.014

Equation: $S/_Y = a + b\ E/_Y$

Where: S = savings per capita
Y = income per capita
$E/_Y$ = property income ratio

*Indicates the lack of significance at 90% level.
() Indicates the Standard Error.

[8]Property income ratio as explanitory variable.

that the savings-income ratio is increased with an increase in the property-income ratio . If the property-income ratio is increased by one per cent the savings-income ratio will be increased by .54 per cent. The positive intercept (.245) implies that if there was no property income, there would still be savings. The positive coefficient is expected since it was found (Table 3) that in Yugoslavia the marginal propensity to save from property income (.617) is greater than the marginal propensity to save from labor income (.183).

The property-income ratio has a negative effect on the savings-income ratio in Spain. However recall that in Spain the marginal propensity to save from labor income (.289) is greater than the marginal propensity to save from property income (-.035)(Table 3). Thus the negative coef-icient on the property-income ratio in Spain seems consistent. However the negative sign of the coefficients on the property-income ratio are not expected for Japan and Taiwan since in these countries the marginal propensity to save from property income is greater than the marginal propensity to save from labor income (Table 3). It would be expected that a higher savings-income ratio would be associated with a higher property-income ratio. One reasonable explanation might be that with a higher property-income ratio, spending will be less since property income receivers save a larger portion of their income. With this decreased spending national income will decrease and thus savings will be less. This

explanation suggests that if allowance is made for the income effects, the influence of the property-income ratio would be positive as expected. In Table 4D allowance is made for both income and the rate of growth of income before the effect of the property-income ratio is considered. This table provides the best explanation of the savings-income ratio. However the coefficients of the property-income ratio are still negative for Japan (-.151) and Taiwan (-.020), although they are now insignificant.

The results of this section do not show that Modigliani's hypothesis is better than the hypothesis that the level of income explains the savings-income ratio. In six of the thirteen countries (Spain, Mauritius, Ceylon, Republic of South Africa, Malta, Burma) the rate of growth of income provides the best explanation of the savings-income ratio. In another six countries (Yugoslavia, Taiwan, Greece, Philippines, Israel, Japan) the level of per capita income provides the best explanation of the savings-income ratio. In South Korea the property-income ratio is most influential in explaining the savings-income ratio.

Transitory and Permanent Concepts Applied to Functional Distribution of Income

In this section we wish to see if there is any difference as to how laborers and property income receivers treat their transitory income, i.e., the concepts of transitory and permanent income are applied to each type of income.

Table 4D

ESTIMATES OF SAVING-INCOME RATIO[9]

Country	Intercept	Regression Coefficients of: Y	g	E/Y	R^2
Yugoslavia	-0.2057	144.4969	0.1203	0.2567	.943
	(0.0695)	(21.9723)	(0.0394)	(0.1321)	
Taiwan	-0.1006*	0.0324	0.2439	-0.0201*	.920
	(0.0857)	(0.0048)	(0.0929)	(0.1328)	
Greece	-0.0687*	5.2562	-0.0058*	0.1683*	.887
	(0.1134)	(1.0089)	(0.1063)	(0.1915)	
Spain	0.1736*	1.2187*	0.3491	-0.3825*	.796
	(0.3024)	(3.1163)	(0.1299)	(0.5703)	
Philippines	-0.4957	1.2408	-0.1114*		.779
	(0.0808)	(0.1776)	(0.2506)		
Israel	-0.3027*	0.0541	-0.1445*	0.5914*	.724
	(0.3559)	(0.0147)	(0.2921)	(1.0217)	
Mauritius	-0.2428*	0.1592*	0.3211*	0.4110	.621
	(0.2567)	(0.2567)	(0.2032)	(0.2512)	
Japan	0.1725*	0.1278*	0.1858	-0.1514*	.591
	(0.1166)	(0.1447)	(0.0834)	(0.2400)	
Ceylon	0.2914*	0.5776*	0.3025	-1.2104*	.488
	(0.2305)	(0.4072)	(0.1831)	(0.8130)	
Rep. S. Africa	0.0841*	-0.0375*	0.4347		.293
	(0.0597)	(0.2199)	(0.2503)		
Malta	0.3068*	-0.5333*	0.2556*	-0.1658*	.206
	(0.2130)	(0.7977)	(0.2075)	(0.3186)	
S. Korea	-0.1899*	0.4789*	-0.0516*	0.3222*	.187
	(0.1539)	(2.2260)	(0.1438)	(0.2376)	
Burma	0.1404*	-0.1351*	0.0184*		.050
	(0.1111)	(0.5181)	(0.0467)		

Equation: $S/_Y = a + b_1 Y + b_2 g + b_3 E/_Y$

Where: S = savings per capita
Y = income per capita
g = growth in real income
$E/_Y$ = property income ratio

*Indicates the lack of significance at 90% level.
() Indicates the Standard Error.

[9]Many explanitory variables.

As seen in Table 5 the explanatory power of the saving function is increased for a number of countries. In Mauritius and Ceylon the explanatory power of this model is much better than the Simple Keynesian Model (Table 1A). In the Keynesian Model the value of the R^2 were .436 and .218 for Mauritius and Ceylon respectively where as the values of R^2 are .666 and .611 in this model. The R^2 for South Korea is .546. This is by far the best model for explaining the level of savings in South Korea. The simple Keynesian Model had an R^2 value of .046 for South Korea. Notice that in South Korea the property income receivers contribute the most to savings. The marginal propensity to save from permanent property income is .241 and the marginal propensity to save from transitory property income is .316. There appears to be a tendency to dis-save from permanent labor income. The coefficient on permanent labor income is -0.642 and it is significant at the ninety per cent level. This negative coefficient implies that if there is an increase in permanent labor income, laborers spend all the increase plus some extra. Laborers probably expect that this increase in income will extend into the future and thus they borrow in order to consume now, with the expectation of paying it back later. With this extra permanent income they feel that they are able to meet these payments.

In Japan it was found (Table 3) that the marginal propensity to save from property income (.588) is greater than the marginal propensity to save from labor income

Table 5

TRANSITORY AND PERMANENT CONCEPT APPLIED TO FUNCTION OF DISTRIBUTION OF INCOME

Country	Intercept	Regression PLI	Coefficient of: TLI	PPI	TPI	R^2
Japan	-0.0041* (0.0074)	0.2029* (0.1855)	0.2417* (0.3063)	0.1439* (0.3901)	0.4171* (0.3287)	.985
Greece	-0.0012 (0.0002)	0.2948 (0.1597)	0.2482* (0.3062)	0.1614 (0.1004)	0.2237 (0.1029)	.979
Taiwan	-1.2378 (0.2050)	0.3498 (0.0645)	0.2442* (0.1825)	0.3013 (0.1252)	0.5430 (0.0996)	.976
Yugoslavia	-0.0001* (0.0001)	0.2782 (0.1157)	0.2103* (0.1753)	0.2063* (0.5100)	0.7155 (0.4064)	.916
Israel	-0.2203 (0.0696)	0.3581* (0.5367)	0.5045* (0.4390)	-0.3151* (0.7659)	0.4115* (0.3194)	.902
Spain	-0.0058* (0.0040)	-0.4522* (0.5413)	0.5902 (0.2254)	1.3957* (1.1848)	0.5544* (0.5414)	.870
Malta	-0.0105* (0.0216)	0.4437* (0.2934)	0.3327* (0.4077)	0.0976* (0.5729)	0.2509* (0.4102)	.743
Mauritius	-0.4621* (0.3623)	0.4561* (0.4436)	0.0748* (0.3684)	0.7653 (0.3796)	1.1239 (0.2716)	.666
Ceylon	-0.1405* (0.1557)	0.8220* (0.7328)	1.2997 (0.5609)	-0.2814* (0.2638)	0.0484* (0.3257)	.611
S. Korea	0.0005* (0.0005)	-0.6427 (0.2448)	0.5157* (0.3507)	0.2418 (0.0890)	0.3165 (0.1647)	.546

Equation: $S = a + b_1 \text{ PLI} + b_2 \text{ TLI} + b_3 \text{ PPI} + b_4 \text{ TPI}$

Where: S = real savings per capita
PLI = permanent labor income
TLI = transitory labor income
PPI = permanent property income
TPI = transitory property income

*Indicates the lack of significance at the 90% level.
() Indicates the Standard Error.

(.008). Also it was discovered (Table 2) that the marginal propensity to save from transitory income (.321) is greater than the marginal propensity to save from permanent income (.167). In Japan (Table 5) it is seen that the marginal propensity to save from transitory income is greater than the marginal propensity to save from permanent income for both labor income and property income. However notice that when only permanent income is considered, the marginal propensity to save from labor income (.202) is greater than the marginal propensity to save from property income (.143). Similar results are found for Taiwan, Yugoslavia and Israel, i.e., that when permanent income is considered the marginal propensity to save from labor income is greater than the marginal propensity to save from property income; but when the transitory and permanent concepts were ignored the marginal propensity to save from property income was larger. The results suggest that in these four countries (Japan, Taiwan, Yugoslavia, Israel) it is only the transitory income effect that causes the marginal propensity to save from property income to be greater than the marginal propensity to save from labor income. This implies that if there is no growth in per-capita income, the marginal propensity to save from property income may not be greater than the marginal propensity to save from labor income.

Recall that results in Table 3 implied that for Japan, Taiwan, Yugoslavia, Israel, Mauritius and South Korea, a transfer of income to the property owners would increase

savings. However the results in this section suggest that in Japan, Taiwan, Yugoslavia, and Israel there is little to be gained by giving permanent tax exemption to property owners. For example, suppose the economy is stagnant and the government makes a once and for all transfer of income to the property owners in the belief that they will save a greater portion of the income. Taking the example of Taiwan for illustrative purposes, savings will increase the first year since the marginal propensity to save from transitory property income (.543) is higher than for any other type of income. But property income receivers may become accustomed to this extra income and gradually treat it as permanent income, in which case their marginal propensity to save would be .301. However labor income receivers have a marginal propensity to save of .349 and this coefficient has more significance than the coefficient on permanent property income (.301). Thus for the purpose of increasing savings an income transfer is only beneficial if it is temporary.

Thus in these four countries (Japan, Yugoslavia, Taiwan, and Israel) if the government gives a permanent tax cut for the purpose of increasing savings, the cut may be most beneficial if given to laborers. For Japan and Taiwan the results in Table 3 seemed to suggest that there would be a benefit in a higher property income ratio. However when we tested this hypothesis we found a negative relationship (Table 4C). The analysis of this section helps to

explain this negative relationship, since we see that it is only for transitory income that property income receivers have a higher marginal propensity to save.

Considering property income, in all countries except Spain, the marginal propensity to save from transitory income is larger than the marginal propensity to save from permanent income. When there is growth in income it is this group, i.e., the property income receivers, that channels some of the increase into savings.

Effect of Interest Rate

The results of Table 6 are somewhat disappointing since the only coefficient that is significant at the ninety per cent level is in the case of Ceylon. The coefficient on the interest rate in the Philippines is significant at the eighty per cent level and significant at the seventy per cent level in the case of Japan. In the case of Ceylon the interest rate estimated by the real discount rate exerts a negative influence on the level of household savings. The economy of Ceylon is primarily an agricultural economy. Perhaps the saving plans of the rural households are affected by their investment plans. Thus a higher interest rate may decrease investment and thus savings. In Ceylon the explanatory power of the saving function is increased compared to the simple Keynesian Model. The R^2 is increased from .218 in the simple Keynesian Model to .585 when the interest rate is included in the regression.

Table 6

EFFECT OF INTEREST RATES

Country	Intercept	Regression Coefficients of: Y	r		R^2
Japan	-0.0110 (0.0047)	0.1291 (0.0079)	0.0008* (0.0006)	RD	.980
Greece	-0.0011 (0.0003)	0.1781 (0.0138)	0.0000* (0.0000)	RD	.979
Taiwan	-1.1824 (0.2940)	0.3209 (0.0242)	0.0032* (0.0107)	RC	.966
Israel	-0.2861 (0.1198)	0.0996 (0.0300)	0.0129* (0.0175)	RB	.805
Philippines	-0.2875 (0.0472)	0.7288 (0.1300)	-0.0046* (0.0032)	RD	.796
Spain	-0.0014* (0.0023)	0.1771 (0.0427)	-0.0002* (0.0005)	RD	.704
Ceylon	-0.2408 (0.0060)	0.5936 (0.1335)	-0.0217 (0.0061)	RD	.585
Rep.S.Africa	-0.0157* (0.0181)	0.0746 (0.0948)	0.0038* (0.0043)	RG	.397
Korea	0.0000* (0.0005)	0.0030* (0.0525)	0.0000* (0.0000)	RD	.062
Burma	0.0086* (0.0244)	0.0700* (0.1155)	0.0000* (0.0000)	RC	.052

Equation: $S = a + b_1 Y + b_2 r$

Where: S = real savings per capita
Y = real income per capita
r = real interest rate measured by:
RC = real call rate, RD = real discount rate, RG = real government bond yield, RB = interest rate charged by the three largest banks.

*Indicates the lack of significance at 90% level.
() Indicates the Standard Error.

The coefficient on the interest rate in Japan is .0008 indicating that the interest rate exerts a positive influence on household savings. This result is different than that obtained by Williamson.[10] His results indicated that the interest rate exerts a negative effect on household savings in Japan.

From this analysis no strong conclusion can be drawn as to the effect of interest rates on household savings. Some households may be saving for a specific amount and thus the interest rate would have a negative influence on savings, while savings of other households may be positively influenced. From this analysis it appears that interest rates are not a strong factor affecting household savings, except for Ceylon. The inclusion of the interest rate does not increase the explanatory power of the saving functions significantly compared to the simple Keynesian Model. The models in which income is divided into different types of income (i.e., permanent and transitory income, and labor and property income) add much more to the explanatory power of the saving functions than does the inclusion of the interest rate. For example the R^2 values for Burma and South Korea are .052 and .046 in the simple Keynesian Model and the inclusion of the interest rate increased the R^2 values to .062 and .052. However when income is classified according to permanent and transitory income (Table 2) the R^2 for

[10] Jeffrey G. Williamson, loc. cit., p. 208.

Burma is .461. In Table 5, the permanent and transitory concepts are applied to the functional distribution of income and the R^2 for South Korea is .546. Thus the level of savings in households does not seem to be strongly affected by interest rates.

Effect of Prices on Household Savings

It was hypothesized that the price level would have a negative effect on savings and that the rate of inflation would have a negative or positive effect according to the expectations of the people. If people expect a high rate of inflation to be indicative of the future, they may consume now and thus savings may decrease. If people expect that the high rate of inflation is just temporary they may defer present consumption and thus savings may be increased.

As seen in Table 7A, consideration of the effects of prices adds little more to the explanatory power of the saving function as compared to the simple Keynesian Model. The R^2 values are increased the most for South Korea and Burma. In the simple Keynesian Model the R^2 values were .052 and .046 for Burma and South Korea respectively, but in this model the R^2 values are increased to .210 and .234. In both these countries the rate of inflation has a positive influence on the level of savings.

In Japan, Greece Israel, Spain, Ceylon, Republic of South Africa, and Burma the coefficients on the price level are negative. Only in the case of Japan and Ceylon are

Table 7A

EFFECT OF PRICES

Country	Intercept	Regression Coefficients of: Y	P	$\dot{P}/p$	R^2
Japan	0.0122 (0.0058)	0.2902 (0.0348)	-0.0003 (0.0001)	-0.0116* (0.0166)	.987
Greece	-0.0005* (0.0017)	0.1851 (0.0453)	-0.0000* (0.0000)	0.0001* (0.0026)	.979
Taiwan	-1.2479 (0.1340)	0.3159 (0.0303)	0.0005* (0.0017)	-0.0876* (0.4183)	.966
Israel	-0.1490 (0.0729)	0.1166* (0.0833)	-0.0003* (0.0028)	-0.5409 (0.2078)	.906
Yugoslavia	-0.0001 (0.0000)	0.1866 (0.0537)	0.0000* (0.0000)	0.0001* (0.0001)	.901
Philippines	-0.1972 (0.0529)	0.3666 (0.1731)	0.0005* (0.0004)	0.1048* (0.1574)	.799
Malta	-0.0053* (0.0112)	0.2168 (0.0562)	0.0000* (0.0001)	0.0348* (0.0500)	.773
Spain	-0.0020 (0.0010)	0.2829 (0.1272)	-0.0000* (0.0000)	-0.0051* (0.0047)	.753
Ceylon	0.1255* (0.0997)	0.6713 (0.1608)	-0.0050 (0.0016)	0.2253* (0.3036)	.576
Mauritius	-0.9061 (0.5114)	0.7168 (0.2655)	0.0028* (0.0040)	-0.3240* (0.6199)	.457
Rep. S. Africa	-0.0057* (0.0268)	0.2831* (0.3917)	-0.0004* (0.0012)	-0.0364* (0.2847)	.359
S. Korea	0.0007* (0.0008)	-0.1295* (0.1255)	0.0000* (0.0000)	0.0015* (0.0013)	.234
Burma	0.0689* (0.0564)	0.0723* (0.1127)	-0.0005* (0.0004)	0.0659* (0.0558)	.210

Equation: $S = a + b_1 Y + b_2 P + b_3 \dot{P}/p$

Where: S = real savings per capita
Y = real income per capita
P = price level

*Indicates the lack of significance at 90% level.
() Indicates the Standard Error.

these coefficients significant at the ninety per cent level. In these countries the price level exerts a negative influence upon household savings. In Taiwan, Yugoslavia, Philippines, Malta, Mauritius and South Korea the coefficients on the price level are positive, however all are insignificant at the ninety per cent level of significance. Only in the Philippines is the standard error (.0004) less than the coefficient (.0005) indicating that perhaps the price level has a slight positive influence on household savings.

In Japan, Taiwan, Spain, Mauritius, Israel and the Republic of South Africa the coefficients on the rate of inflation are negative. Only in Israel and Spain are the standard errors smaller than the coefficients. In these countries people seem to base their expectations upon present rates of inflation since a high rate of inflation causes savings to decrease. In Greece, Yugoslavia, Philippines, Malta, Ceylon, South Korea, and Burma the coefficients on the rate of inflation are positive. However only for the case of South Korea and Burma are the standard errors less than the coefficients. In these countries people seem to base their expectations upon past rates of inflation. People may expect that a high rate of inflation will reverse itself and thus they postpone consumption and savings are increased.

Earlier it was hypothesized that the price level and

changes in prices may affect the two groups of income receivers differently. We now examine the marginal propensities to save from each type of income, after allowance has been made for prices (Table 7B). The results will be compared with the results in Table 3 which deals with the Functional Distribution ignoring the effect of prices.

In Table 7B the results for Japan are interesting. Before the effect of prices was considered, the marginal propensity to save from property income (.588) was higher than the marginal propensity to save from labor income (.008). After the effect of prices is considered the marginal propensity to save from labor income is .324, while the marginal propensity to save from property income is .270. This seems to imply that if there were no price changes the marginal propensity to save from labor income would be greater than the marginal propensity to save from property income. This implies that it is rising prices that enable the property income receivers to save more. Rising prices will probably benefit property owners most through the effects of capital gains. Property owners treat this extra increase in a similar way as transitory income, and thus savings are increased. These results seem to indicate that in Japan rising prices benefit property income receivers. Laborers will have less incentive to save with rising prices where as property owners and entrepreneurs see opportunities to be taken advantage of and thus increase their savings.

Table 7B

EFFECT OF PRICES WITH ALLOWANCE FOR PROPERTY AND LABOR INCOME

Country	Intercept	Regression L	Coefficient E	of: P	$\dot{P}/P$	R^2
Japan	0.0118* (0.0120)	0.3242 (0.1858)	0.2702* (0.2763)	-0.0003 (0.0001)	-0.0139* (0.0172)	.987
Greece	-0.0008* (0.0021)	0.2606 (0.1548)	0.1962 (0.0648)	-0.0000* (0.0000)	0.0000* (0.0029)	.978
Taiwan	-1.5446 (0.1696)	0.1439 (0.0833)	0.5289 (0.0978)	0.0032 (0.0017)	-0.3055* (0.3807)	.975
Israel	-0.1500 (0.0667)	-0.0516* (0.2675)	0.3472* (0.2776)	0.0000* (0.0030)	-0.4935 (0.2124)	.922
Yugoslavia	-0.0002 (0.0001)	0.1679* (0.1118)	0.7088* (0.4663)	0.0000* (0.0000)	-0.0000* (0.0001)	.905
Malta	-0.0540 (0.0238)	-0.2366* (0.3614)	1.0022 (0.5058)	0.0003 (0.0001)	0.0855* (0.0595)	.826
Spain	-0.0037* (0.0030)	0.1502 (0.4505)	0.6623* (0.9099)	-0.0000* (0.0000)	-0.0082* (0.0071)	.764
Ceylon	-0.0589* (0.1612)	1.3400 (0.4942)	0.2560* (0.3300)	-0.0038 (0.0017)	0.2017* (0.2927)	.637
Mauritius	-0.9563 (0.5255)	0.5169* (0.3963)	0.9301 (0.2455)	0.0040* (0.0036)	-0.2619* (0.5445)	.618
Korea	0.0013* (0.0009)	-0.4569 (0.2481)	-0.1739* (0.1323)	0.00001 (0.00000)	0.0000* (0.0016)	.417

Equation: $S = a + b_1L + b_2E + b_3P + b_4\dot{P}/P$

Where: S = real savings per capita
L = real labor income per capita
E = real property income per capita
P = price level

* Indicates the lack of significance at 90% level.
() Indicates the Standard Error.

Opposite results are found for Malta. Before allowance is made for the effect of prices the marginal propensity to save from labor income (.363) is greater than the marginal propensity to save from property income (.215) (Table 3). After allowance is made for the effect of prices the marginal propensity to save from property income (1.002) is greater than the marginal propensity to save from labor income (-0.236). This implies that changing prices affect savings from property income in a negative manner in Malta.

Thus we see that changing prices have an influence on household savings, both directly and indirectly through different effects on property income and labor income receivers.

CHAPTER V

CONCLUSIONS

Our analysis suggests some interesting conclusions regarding household savings in less developed countries. There does not seem to be any evidence that low marginal propensities to save have been a factor constraining the volume of savings. As seen in Table 1A the marginal propensities to save in some of the countries are remarkably high compared to the marginal propensities to save of some developed countries. For example Johnson and Chiu[1] estimated that the marginal propensities to save from household income for Canada and the United States were .012 and .063 respectively. It is seen that except for the very poor countries (Burma, Ceylon, South Korea) the explanatory powers of the Simple Keynesian Model are no inferior to the more elaborate models which embody the effects of prices, inflation and the interest rate. For Burma, Ceylon and South Korea the explanatory powers of the saving function are increased when refinements are made on the income variable (Tables 2 and 3).

The more elaborate models do not significantly increase the explanatory powers of the saving function compared to the Keynesian model. However the elaborate

[1]Johnson and Chiu, loc. cit., p. 325.

models do yield some interesting results. Table 3 shows that income distribution plays an important role in determining the level of household savings. In Japan, Taiwan, Yugoslavia, Israel, Mauritius, and South Korea the marginal propensity to save from property income is greater than the marginal propensity to save from labor income. In all countries, except the Philippines, the marginal propensity to save from transitory income is greater than the marginal propensity to save from permanent income (Table 2).

Except in the case of Ceylon, interest rates do not appear to have any significant influence on household savings.

In most countries the introduction of prices and inflation into the analysis does not greatly increase in explanatory powers of the saving function compared to the simple Keynesian Model. However in Japan and Malta the function reveals how changing prices affect the savings of each income group. In Japan changing prices affect the marginal propensity to save from property income in a positive manner; whereas in Malta changing prices affect savings from property income in a negative manner.

In so far as the explanation of the savings-income ratio is concerned, no one variable seems to be most important. In some countries the rate of growth in income explains the savings-income ratio the best, whereas in other countries the level of per capita income is most influential in explaining the savings-income ratio. Generally the property-income ratio provides a poor explanation of the

savings-income ratio.

It has been found[2] that the marginal propensity to save from property income is greater than the marginal propensity to save from labor income, so that total savings will be increased by a transfer of income to property income receivers. We found similar results for Japan, Taiwan, Yugoslavia, Israel, Mauritius and South Korea. In Table 5 transitory and permanent concepts are applied to each type of income, and it is seen that for Japan, Taiwan, Yugoslavia and Israel it is only from transitory income that property income receivers have a higher marginal propensity to save. If only savings from permanent income are considered, labor income receivers have a higher marginal propensity to save than do property income receivers. This makes us question the wisdom of measures like a permanent tax relief to property income receivers in the hope that it will increase savings.

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[2]Williamson, loc. cit.

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APPENDIX

APPENDIX

The appendix presents the data that was used for the preceding analysis. Data on savings and income were obtained from the Yearbook of National Account Statistics. The interest rates and price indices were obtained from various issues of International Financial Statistics. In Israel's case the interest rate was obtained from Interest Rates and the Cost of Capital in Israel by Ben Shahar. Population figures were obtained from National Accounts of Less Developed Countries and The Demographic Yearbook. The abbreviations used are listed below:

S = total household savings

Y = total household income

Yd = total disposable household income

L = total household labor income

E = total household property income

RD = discount rate

RC = call rate

RB = interest charged by three largest banks

RG = government bond yield

P = Price index

Pop. = Population

BURMA

Year	S	Y	Yd	RC	P	Pop. (1000's)
1950	110	2504	2347	.75	110	18766
1951	177	2909	2852	1.04	107	19051
1952	359	3185	3092	1.65	103	19376
1953	481	3489	3420	1.10	100	19707
1954	470	3540	3465	1.00	96	20044
1955	675	4653	4557	1.27	100	20387
1956	903	4874	4761	.95	107	20734
1957	460	5095	4968	1.42	114	21120
1958	371	5169	5010	1.61	110	21529
1959	682	5359	5206	1.08	98	21938
1960	332	5605	5427	1.52	110	22355
1961	330	5765	5589	1.98	113	22780
1962	611	6070	5903	2.54	114	23253

Currency expressed in Million Kyats.

CEYLON

Year	S	L	E	Yd	RD	P	Pop. (1000's)
1950	260.0	1816.0	1618	3252	2.5	88.9	7678
1951	230.0	2047.6	1952	3791	2.5	92.6	7876
1952	-145.4	1960.1	1823	3510	2.5	91.9	8074
1953	- 76.6	2037.6	1881	3594	3.0	93.4	8290
1954	240.5	2166.3	1957	3805	2.5	92.9	8520
1955	597.5	2451.6	2213	4366	2.5	92.4	8723
1956	145.6	2314.6	2018	3907	2.5	92.1	8929
1957	- 84.7	2402.3	2054	4042	2.5	94.5	9165
1958	266.3	2502.2	2336	4411	2.5	96.5	9388
1959	275.7	2723.0	2499	4843	2.5	96.7	9625
1960	296.0	2808.0	2875	5277	4.0	95.1	9896
1961	352.0	2873.0	2843	5211	4.0	96.2	10168
1962	225.0	2954.0	2943	5327	4.0	97.7	10443
1963	368.0	3093.0	3334	5808	4.0	100.0	10590
1964	299.0	3240.0	3550	6101	4.0	103.1	10971
1965	184.0	3370.0	3458	6070	5.0	103.4	11232
1966	19.0	3475.0	3580	6377	5.0	103.2	11491
1967	93.0	3697.0	3919	6824	5.0	105.5	11741
1968	520.0	4331.0	4863	8268	5.0	111.7	11964

Currency expressed in Million Rupees.

ISRAEL

Year	S	L	E	Yd	RB	P	Pop. (1000's)
1952	-17	526	334	819	5.8	43.4	1607
1953	- 6	695	426	1082	5.8	55.6	1651
1954	-78	875	559	1361	7.8	62.5	1688
1955	-11	1035	632	1567	7.8	66.1	1748
1956	- 8	1235	759	1864	8.2	70.4	1827
1957	-27	1415	890	2133	8.2	74.9	1937
1958	25	1602	1065	2491	9.4	77.5	1997
1959	79	1831	1198	2851	9.4	78.5	2061
1960	67	2012	1351	3163	9.4	80.3	2114
1961	92	2401	1567	3740	9.2	85.7	2185
1962	44	2905	1822	4454	9.0	93.8	2292
1963	290	3490	2408	5537	9.0	100.0	2376

Currency expressed in Million Israel Pounds.

JAPAN

Year	S	L	E	Yd	RD	P	Pop. (1000's)
1950	384	1414	1642	2781	5.11	55.9	82900
1951	659	1818	2016	3522	5.29	64.6	84240
1952	745	2221	2341	4257	5.84	66.9	85500
1953	557	2678	2421	4774	5.84	72.4	86690
1954	584	2982	2542	5252	5.84	76.0	87980
1955	788	3180	2878	5788	7.30	74.9	89020
1956	925	3612	3055	6340	7.30	75.6	89950
1957	1109	4075	3251	6982	8.40	77.8	90730
1958	1124	4383	3248	7306	7.30	78.6	91550
1959	1543	4935	3593	8233	7.30	79.7	92430
1960	1863	6434	4670	10752	6.94	82.6	93220
1961	2402	7625	5476	12510	7.30	86.9	94060
1962	2691	9091	6138	14442	6.57	92.6	94930
1963	3022	10682	7069	16801	5.84	100.0	95900
1964	3202	12349	7965	19124	6.57	104.1	96900
1965	3875	14302	8890	21824	5.48	111.6	97950
1966	4424	16406	9971	24784	5.48	117.0	98860
1967	5567	19023	11564	28716	5.84	121.8	99920
1968	6563	22223	13350	33281	5.84	128.6	101080

Currency expressed in Thousand Million Yen.

PHILIPPINES

Year	S	Y	RD	P	Pop. (1000's)
1950	225	5823	2.0	82.8	20275
1951	-137	6326	2.0	89.6	20894
1952	-258	6316	2.0	83.9	21533
1953	-123	6764	2.0	81.0	22191
1954	-121	6916	1.5	79.8	22869
1955	-263	7345	1.5	79.1	23568
1956	- 82	7939	1.5	81.2	24288
1957	-263	8478	4.5	82.6	25030
1958	- 90	9131	4.5	85.4	25795
1959	- 14	9584	6.5	84.6	26584
1960	709	11025	5.0	88.1	27410
1961	1269	12204	3.0	89.5	28313
1962	394	13003	6.0	94.7	29257
1963	2042	15111	6.0	100.0	30241
1964	1932	16020	6.0	108.2	31270
1965	2408	17412	6.0	111.0	32345
1966	2829	18888	4.7	117.9	33477
1967	2371	20995	6.0	124.6	34656
1968	1567	22960	7.5	125.0	35993

Currency expressed in Million Pesos.

SOUTH KOREA

Year	S	L	E	Yd	RD	P	Pop. (1000's)
1955	92.6	29.9	62.1	90.7	6.57	43.6	21424
1956	- 3.1	37.8	81.3	117.8	6.57	53.6	22042
1957	8.9	51.3	100.9	149.9	6.57	66.1	22677
1958	5.6	58.5	99.6	154.8	6.57	63.7	23330
1959	0.2	69.8	97.0	160.7	7.30	65.7	24003
1960	- 2.6	80.2	131.3	207.2	10.22	72.4	24695
1961	2.5	90.2	164.9	253.5	10.22	78.3	25402
1962	-10.5	111.1	176.8	288.8	10.22	83.6	26125
1963	6.1	134.5	276.3	413.1	10.22	100.0	26868
1964	11.1	178.1	423.5	605.0	10.22	127.9	27631
1965	2.3	219.7	454.3	681.0	28.00	145.3	28377
1966	42.0	292.8	560.0	680.3	28.00	162.9	29086
1967	11.7	395.4	610.2	1006.3	28.00	180.5	29784
1968	13.1	503.7	731.4	1227.7	23.00	200.6	30470

Currency expressed in Thousand Million Won.

TAIWAN

Year	S	L	E	Yd	RC	P	Pop. (1000's)
1951	1143	3705	4826	8387	41.4	30.3	7717
1952	1591	5247	7294	12275	36.0	39.2	8003
1953	1439	6864	10625	17168	21.6	46.3	8261
1954	655	8262	10215	18494	21.6	47.1	8617
1955	1238	9236	12605	21632	21.6	51.7	8907
1956	989	11353	13491	24545	18.0	59.4	9240
1957	603	14161	14147	28021	18.0	66.0	9506
1958	1731	16020	14883	31188	14.4	67.7	9851
1959	2312	18416	17665	36412	18.0	74.8	10232
1960	3100	23100	24100	47200	18.0	88.7	10612
1961	5100	26000	27300	53700	16.2	95.6	10971
1962	5700	29100	29000	58500	15.8	97.9	11330
1963	8200	32800	32800	66000	14.0	100.0	11698
1964	10700	39000	38400	77700	14.0	99.8	12070
1965	11700	43900	40300	85000	14.0	99.8	12443
1966	15900	49500	44600	94700	14.0	101.8	12811
1967	18800	56500	49600	107300	14.0	105.2	13145
1968	19300	66200	55300	121700	14.0	111.8	13466

Currency expressed in Million N.T. Dollars.

MAURITIUS

Year	S	L	E	Yd	P	Pop. (1000's)
1950	38	210	157	362	83	465
1951	53	249	164	407	96	484
1952	48	276	184	452	98	502
1953	52	303	214	511	100	523
1954	56	299	210	503	99	537
1955	12	318	176	485	97	555
1956	39	327	179	497	96	575
1957	8	330	186	510	95	593
1958	11	352	189	537	96	610
1959	45	380	192	570	95	627
1960	62	385	200	585	97	645
1961	56	381	210	590	95	662
1962	30	396	213	614	98	682
1963	101	432	269	697	96	701
1964	- 27	445	208	661	99	722
1965	38	464	213	683	100	741
1966	20	470	217	695	102	759
1967	24	488	223	711	103	774
1968	13	484	233	732	113	787

Currency expressed in Million Rupees.

REPUBLIC OF SOUTH AFRICA

Year	S	Y	Yd	RG	P	Pop. (1000's)
1955	315	3144	2990	4.33	85.6	13993
1956	345	3390	3224	4.73	87.3	14334
1957	346	3573	3396	4.75	89.8	14678
1958	238	3705	3533	5.13	93.0	15035
1959	328	3911	3730	5.25	94.1	15546
1960	286	3997	3813	5.29	95.4	15925
1961	479	4302	4120	5.77	97.1	16283
1962	567	4577	4391	5.41	98.6	16651
1963	427	4827	4562	4.75	100.0	17041
1964	372	5303	5015	4.77	102.6	17457
1965	647	6036	5696	5.60	106.7	17867
1966	680	6603	6209	6.25	110.6	18298
1967	836	7237	6790	6.50	114.3	18733
1968	572	7648	7151	6.50	116.7	19167

Currency expressed in Million Rand.

GREECE

Year	S	L	E	Yd	RD	P	Pop. (1000's)
1955	4.4	21.1	34.7	56.1	9.0	85.7	7966
1956	5.6	25.0	40.0	65.8	11.0	88.8	8031
1957	6.0	27.2	42.0	70.1	11.0	90.8	8096
1958	6.4	27.5	44.6	73.1	11.0	92.1	8173
1959	7.1	29.1	45.6	76.3	9.0	94.2	8258
1960	7.8	31.3	55.4	88.0	6.0	95.7	8327
1961	11.7	34.0	64.4	99.7	6.0	97.4	8398
1962	10.4	36.9	65.8	105.3	6.0	97.1	8448
1963	13.6	40.1	73.4	117.7	5.5	100.0	8480
1964	17.5	45.4	80.7	131.0	5.5	100.8	8510
1965	19.4	52.1	89.7	148.2	5.5	103.8	8551
1966	20.6	58.7	96.8	161.8	5.5	109.1	8614
1967	24.8	65.3	101.2	174.2	4.5	110.9	8716
1968	25.5	72.1	105.1	184.7	5.0	111.3	8803

Currency expressed in Thousand Million Drachmas.

MALTA

Year	S	L	E	Yd	P	Pop. (1000's)
1955	5.5	17.0	13.0	30.9	100	314
1956	5.5	18.8	15.7	35.0	102	314
1957	6.1	19.5	17.1	37.0	104	319
1958	7.8	20.9	17.9	39.4	107	322
1959	7.1	22.2	17.4	40.3	109	325
1960	9.6	23.8	18.5	44.8	114	329
1961	8.4	24.8	18.4	45.3	119	329
1962	8.1	23.7	18.8	45.2	119	329
1963	8.3	23.5	18.6	45.4	121	328
1964	7.7	24.6	18.6	46.6	123	324
1965	9.2	25.6	19.4	49.8	125	319
1966	11.6	27.7	21.9	54.8	125	317
1967	11.5	29.9	22.2	58.8	126	319
1968	11.9	33.7	24.5	66.5	128	319

Currency expressed in Million Pounds.

SPAIN

Year	S	L	E	Yd	RD	P	Pop. (1000's)
1955	12.6	167.3	126.2	290.5	3.0	58.2	29056
1956	17.4	194.6	145.0	335.4	3.4	61.6	29301
1957	16.3	227.5	169.6	391.0	4.0	68.2	29548
1958	4.0	242.3	199.6	434.6	4.0	77.4	29798
1959	1.1	247.2	196.4	436.4	5.0	83.5	30049
1960	37.6	282.4	200.0	467.5	4.6	86.3	30303
1961	48.7	319.1	229.2	534.4	4.6	86.2	30559
1962	58.4	370.1	260.3	615.0	4.6	92.0	30817
1963	77.0	450.2	310.5	745.4	4.6	100.0	31077
1964	90.3	515.5	337.5	833.6	4.6	107.0	31339
1965	108.6	603.4	411.0	995.7	4.6	121.1	31604
1966	128.8	706.7	457.6	1141.7	4.6	128.7	31871
1967	103.9	807.5	490.4	1244.2	5.1	136.9	32140
1968	116.6	875.6	531.4	1356.0	5.1	143.7	32411

Currency expressed in Thousand Million Pesetas.

YUGOSLAVIA

Year	S	L	E	Yd	P	Pop. (1000's)
1952	0.05	2.1	2.0	5.1	54	16798
1953	0.20	2.2	2.6	5.9	56	17048
1954	0.27	2.8	2.8	6.8	55	17284
1955	0.09	3.2	3.6	8.2	61	17519
1956	0.15	3.5	3.6	8.7	66	17685
1957	0.49	4.6	4.3	10.7	68	17859
1958	0.38	5.1	4.3	11.3	71	18018
1959	0.69	6.5	4.7	13.4	72	18214
1960	0.60	8.1	5.1	15.5	79	18402
1961	1.10	9.6	5.7	18.6	86	18607
1962	1.00	10.8	6.3	20.5	95	18837
1963	2.20	13.0	7.3	25.3	100	19065
1964	4.50	19.1	9.4	33.5	111	19279
1965	4.90	26.6	13.1	45.1	150	19508
1966	9.90	35.1	17.5	60.5	184	19735
1967	6.50	38.8	18.3	63.3	199	19949
1968	9.70	43.8	18.0	71.6	209	20186

Currency expressed in Thousand Million New Dinar.